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THE EVOLUTION OF CENTRALIZED
MILITARY PAY IN THE NAVY

by

John Calvin Webster

THE EVOLUTION OF CENTRALIZED MILITARY PAY
IN THE NAVY

BY

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Bachelor of Science

Georgia Institute of Technology, 1954

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CHAPTER I

INTRODUCTION

After the personal satisfaction of a job well done, one of the most important considerations of any position is the pay involved. This is particularly true in the armed services where compensation has historically seemed to lag behind what a man could earn in civilian industry.

Realizing this, most disbursing officers do their utmost to see that the personnel, whose pay records they hold, get the best service possible. Whether it be the regular pay due the member, the settlement of claims involving travel for the member or his dependents, or an emergency payment, the one item that has always meant the difference between peace of mind and anxiety is the "pay service."

Statement of Problem

With the computer age has come the quest for better service, both for the member and for many other functional areas. This poses the question: What will centralization of military pay in the Navy mean to the Department of Defense, the Department of the Navy, and last, but far from least, the individual man in the Navy?

Method of Presentation

In development of the research question, there have

arisen many subsidiary questions, which will be treated in this thesis. Some are already evident as a part of the basic question. They are:

1. Why should the military departments centralize at this time?
2. What are the benefits and limitations of a centralized pay system?
3. How will the centralization be accomplished?
4. Has an undertaking such as this ever been attempted before?

The Department of Defense Directive establishing policies and objectives for the development and installation of a Joint Uniform Military Pay System (JUMPS) provides the initial vehicle for us to approach this problem of centralization.¹ The scope of this study, however, will embrace the following:

Chapter I includes the Introduction, with the statement of the problem, the method of presentation, and a brief summary of the succeeding chapters.

Chapter II is a discussion of the legislative requirements which initially were responsible for this program, together with a discussion of the Navy's first attempt at centralization and computerization in 1961. A brief summary

¹U.S. Department of Defense, Program for the Development, Test, Evaluation, and Installation of the Joint Uniform Military Pay System, Department of Defense Directive 7330.3 of 4 November 1966.

of what the present manual system consists of will also be presented to illustrate the differences envisioned by adoption of the centralized system.

Chapter III provides the basic objectives and policies of the centralized military pay system with a discussion of how it is being initiated in the Navy.

Chapter IV will treat the mechanics of source data automation and centralized processing as they apply to this program.

Chapter V discusses the products anticipated to be available from the centralized system.

Chapter VI will discuss the benefits and limitations of this new system as they apply to the individual member and to management, with a thought to the costs involved in the implementation.

Chapter VII will provide a reiteration of the problem areas together with the conclusions.

Choice of this subject for an advanced study was governed by my past experiences in the disbursing field and the desire to bring myself abreast of the times. During my Naval career, I have disbursed aboard ship and at two activities ashore; the latter assignment as Officer-in-Charge, U.S. Navy Finance Office, Washington, D.C. While attached to NFO, Washington, from 1961 to 1963, I was responsible for the first Navy test of a computerized military pay system.

This thesis is an historical overview which hopefully

will fill the existing gap in this area. During the research phase, nowhere could I find a chronological listing of events which have taken place in the military pay field in the Navy. For a thorough understanding of what is now evolving in this important area, a knowledge of past occurrences is necessary.

I have endeavored to bring to this discussion the most current information available, but with the implementation of any new program, there is always constant modification and innovation, making it difficult, if not impossible, to keep current with every change. The data presented in this study are the most current available at the time of this writing.

The methodology used is based primarily on observations and interviews with personnel in the Navy who are responsible for the development of the Joint Uniform Military Pay System (JUMPS). I have also relied heavily on my past involvement in the field and my desire to learn, in the hope that a fresh look at the subject, from one who has not been intimately connected with it for the past several months, will provide some innovations that may have been overlooked, or at the very least, strengthen and confirm those decisions already made.

CHAPTER II

WHY CENTRALIZE MILITARY PAY?

Legislative Requirements

There is no Public Law in the United States today that says that military pay must be centralized in all the armed services. There are, however, Public Laws stipulating various other requirements that, when imposed on the services, have made the centralization and computerization of military pay a logical step in a vast chain of events leading to a more efficient and effective utilization of men, money, and materials.

The first such law to which one can link this chain is Title IV of the National Security Act of 1947, a 1949 amendment to the original act. This new act provided among other things that budget estimates of the Department of Defense,

-----shall be prepared, presented, and justified where practicable, and authorized programs shall be administered, in such form and manner as the Secretary of Defense, subject to the authority and direction of the President may determine, so as to account for, and report the cost of performance of readily identifiable functional programs and activities, with segregation of operating and capital programs.¹

The Act provided for the formation of a Comptroller's division or area in the Department of Defense and in the Army,

¹U.S. Public Law 216, 81st Congress, 1st Session,
Title IV of the National Security Act.

Navy, and Air Force, as well. The responsibility of the three service comptrollers covered such areas as budgeting, accounting, progress and statistical reporting, and internal audit.

Although the era of the performance budget had started with the Reorganization Act of 1939, Title IV of the National Security Act of 1947 was the first solid expression of approval by Congress of performance budgeting, as such. Impetus was provided for this decision, however, by the recommendations of the first Hoover Commission, which explicitly advised that the whole budgetary concept of the Federal Government be refashioned into a performance budget.²

Close on the heels of Title IV's enactment came the Budget and Accounting Procedures Act of 1950.³ This Act provided the President with authority to build a Budget in such form and detail as he may determine. He could prescribe content, order, and arrangement of proposed appropriations, statement of expenditures, and estimated expenditures contained in the Budget. Congress was, in a sense, although the bill does not specifically mention it, encouraging the spread of performance budgeting to agencies, other than the Department of Defense.

²Commission on Organization of the Executive Branch of the Government, Budgeting and Accounting, Washington, D.C., 1949, p. 8.

³U.S. Public Law 784, 81st Congress, 2nd Session, The Budget and Accounting Procedures Act of 1950.

In 1955, the second Hoover Commission reviewed the progress of performance budgeting to date and further recommended the conversion of agencies' personnel accounting systems to an accrual system.⁴

The results of the second Hoover Commission appear as a Public Law with the Budget and Accounting Procedures Act of 1956.⁵ In essence, this Act is an amendment to the Budget and Accounting Procedures Act of 1950, and was passed primarily to strengthen and improve budgeting and accounting methods in all agencies. This Act provides that, as soon as possible, agencies of the Federal Government should convert their personnel accounting systems to an accrued accounting system. Obligations for pay and allowances, family housing, and other personnel oriented costs must be established in the month incurred. That is, the obligation exists when the entitlements are earned (accrued entitlements) by a service member, not with the payment of the member.

Since this accrual accounting requirement was imposed on an "as soon as possible" basis and was not followed up with inspection by Congress through the General Accounting Office, the time lag has run into years. In fact, the first Department of Defense directive to deal directly with the

⁴ Commission on Organization of the Executive Branch of the Government, Budget and Accounting, Washington, D.C., 1955, p. 15.

⁵ U.S. Public Law 863, 84th Congress, 2nd Session, The Budget and Accounting Procedures Act of 1956.

subject of accrual accounting for the armed services was not issued until October of 1962.⁶ Implementation of this program was to have been completed within two years from the date of the directive--a date that was never met by the Navy, nor has it been accomplished to this day. With the arrival of the Department of Defense sponsored JUMPS program in late 1966, the Navy began making progress toward the accomplishment of accrual accounting as part of its centralized pay program.

The First Attempt at Mechanization

The fact that progress was not made in the accrued accounting area, does not mean that there was no attempt in the Navy to establish this new system. Actually, the Navy took the lead in systems development in this area in early 1961.

This first venture into the mechanization of military pay was to provide a multiplicity of benefits. First, the new system was to meet the accrued accounting requirements. Secondly, accuracy of records and a clear audit trail were of importance. Third, the work load of the individual pay offices was to be reduced drastically, especially during the two periods of transition each year when old pay records are closed and balanced out and new records are opened. Finally, it was felt that the new system would provide better service

⁶U.S. Department of Defense, Program for Improvement in the Management of Military Personnel Appropriations and Related Personnel Programs of the Active Forces.
DOD Directive 7040.3 of 2 October 1962.

to the individual member in the increased accuracy of his account and in providing him with a statement of pay transactions every time an entitlement or deduction changed on his record.

To test this proposed system, the Office of the Comptroller of the Navy designated the Navy Finance Office, Washington, D.C., as the test site--probably because of the close proximity of this Finance Office to the Comptroller's organization and the fact that pay to members in the Washington area does vary somewhat from pay in other areas. The principal variances were the partial payments of enlisted men's rations for subsistence and the high percentage of officers' accounts maintained as compared with other Finance Offices. It was felt that if the new mechanized system would work in Washington, D.C., it would work anywhere.

The National Cash Register Computer, Model 390, was chosen as the test computer. The NCR 390 is a relatively inexpensive system consisting mainly of an NCR bookkeeping machine coupled with a logic unit. The reason for its choice was that it was the only system available which could meet the Navy's requirement for a hard-copy pay record. Had this requirement been relaxed, permitting the system to be developed on a tape or punched card operation, the NCR 390, in all probability, would not have been chosen for the test.

The evaluation of the 390 system was completed in late 1963, after exhaustive testing with groups of pay records

varying from a few hundred to well over ten thousand. The conclusion drawn from these tests was that the 390 itself was not the equipment to handle the whole Navy-wide computerization of pay.

The primary limiting factors of the system were:

- (1) The volume of changes experienced each month in military pay could not be handled at a level compatible with the number of machines programmed for each activity. The original cost estimates for the 390 installations were based on each computer being able to process transactions for approximately five thousand accounts. This figure was in error by about twenty percent. Four thousand accounts turned out to be a more realistic figure, and this did not include programming of time to handle the accrued accounting requirement--the main reason why the system was being tested in the first place.⁷
- (2) The computer was completely incompatible with shipboard requirements. Where some systems are not affected by minor rolling such as a large ship encounters, the 390 had to be absolutely level at all times.
- (3) The fact that the 390 is programmed only in a numeric system, and the fact that a very limited field is available for storage of information, make it somewhat cumbersome for personnel to adjust to and operate.
- (4) Some difficulty was experienced in developing a pay record on one computer and then trying to read it out on another

⁷Vivienne M. Puzin, U.S. Navy Finance Center, Washington, D.C. (Military Pay Department), Personal Interview, 29 January 1968.

computer. With this happening in an office that had only two computers, many problems were envisioned should records have to be transferred (as they naturally are) from one geographical area to another. Also, the transferring of records presented another problem. If the record was folded through the middle to be placed in an envelope, one cell of information on the magnetic tape on the back of the record would be destroyed.⁸

In retrospect, the NCR 390 test can be considered far from a successful venture by the Navy. It was helpful, however, in guiding the Navy into the era of computerized pay. It was learned that little, if anything, would be gained by centralizing pay operations on a regional basis rather than one large computer at a central location. It was also learned that the Navy had to have hardware with greater capabilities for producing information which may be necessary for other programs (budgeting and planning), not just paying the troops; and, that to accomplish all of this would take a system that could utilize all the facets of computer technology; not one that was restricted to providing a hard-copy pay record to each member of the military. Most importantly, the Navy learned to plan future systems in a more methodical and exacting manner, and to proceed with care and attention to detail.

Attention to detail in systems development leads to reduction of errors when the system is finally placed in operation. This area is one of particular significance to the General

⁸Ibid.

Accounting Office--especially where system errors may result in illegal or erroneous disbursement of public funds. GAO's position is quite clear in that it advocates that no system should be placed on automatic data equipment until it is completely checked out and ready. If placed in use too early, as were various phases of the NCR 390 test, systems tend to promote more errors than were normally experienced prior to automation.⁹

The Present Manual Pay System

The current manual system for payment of military personnel in the Navy was established in June of 1944.¹⁰ At that time the pay functions were transferred from a vouchered type payment on "soft rolls" to the individual "hard copy" pay record. For nearly twenty-four years this system has operated relatively smoothly and has remained extremely consistent, especially in comparison with systems utilized in the other services. The individual accounts are maintained in disbursing offices which are, for the most part, located in close geographical proximity to the commands served.

All entries to the accounts, changes in entitlement, changes in allotments and deductions, and payments to the

⁹Frank H. Weitzel, Assistant Comptroller General of the United States, Guest Speaker, Navy Graduate Financial Management Program, The George Washington University, November 13, 1967.

¹⁰Honorable Frank L. Yates, Acting Comptroller General of the United States, Letter to the Secretary of the Navy, 18 September 1943.

member are recorded by a pay roll clerk; usually a civilian ashore, and an enlisted man aboard ship. Every monetary entry to the pay record necessitates a change to the amount of pay due to the member on the next pay day.

For those personnel ashore involved with pay accounts only, the maximum number of records one clerk can handle is approximately 250. This figure rises sharply, however, in afloat commands where only military personnel are involved in the disbursing functions. An example of this is the average destroyer with a crew of 325 to 400 men where there is only one disbursing clerk who has the responsibilities for all the pay accounts, processing of travel vouchers, and clerical duties entailed in the submission of monthly financial returns.

The Navy's strength of about 750,000 officers and enlisted personnel is distributed approximately 60 percent ashore and 40 percent afloat. This means that only the 60 percent, or 450,000, are currently paid by check. Those personnel afloat are almost exclusively paid by cash.

The only appreciable amount of automation now in effect in disbursing offices is in the larger activities maintaining several thousand accounts. This mechanized system basically consists of the printing of pay checks, money lists, and check distribution lists by employment of a master deck of cards containing the name, serial number, and distribution code of each individual paid and a deck on which the amounts due each payee are mark sensed by an electrographic pencil. The mark sensed deck also contains the punched name and serial number

of the payee and is reproduced in its entirety prior to every pay day. The master deck is updated by insertion or withdrawal of cards as changes occur. There is no calculating function in this process--only reproduction. The actual calculation of the amounts due, and any other operation necessary in maintenance of the pay accounts is strictly a manual function of the disbursing clerks.

Under this semi-automated system at some activities ashore and the complete manual system at all other activities, the chance for error is relatively high. The audit trail is long and laborious, and sometimes it is months or even years before erroneous pay record entries are discovered. When the errors are discovered, more time and funds are involved in the recovery process, not to mention the hardship endured by the individual member in having to reimburse the government for these sums.

The total cost to the Navy for the maintenance of this manual pay system, including labor, material, and various services, is currently about \$22,600,000 annually. This figure is based on Standard Production Rates as developed in a methods engineering study conducted at the Navy Regional Finance Center, Oakland, California, in October 1966.

Immediate responsiveness to the needs of the individual member will always remain the foremost attribute of the Navy's manual military pay system. No form of manual modification, however, short of the mechanization associated with the

development of JUMPS, will continue to provide a high degree of individual responsiveness and still furnish the management information so necessary for the budgeting and resources management programs.

CHAPTER III

DEVELOPMENT OF THE JOINT UNIFORM MILITARY PAY SYSTEM (JUMPS) IN THE NAVY

Basic Objectives and Policies

To begin an accrual accounting system for personnel accounting within the Department of Defense, and to provide the required budget and resources management information needed from the military pay area----it became apparent that the only way this could be achieved would be in some form of centralization of the military pay functions. Without the centralization, collection of the required data would not only be a difficult, time consuming task, but would in all probability be of questionable accuracy.

The Department of Defense thus instituted the JUMPS program with the following as its basic objectives:

- A. This program has as its primary goal the application of the best and most efficient management and operating techniques in a military pay system based on (1) adequate service to members; (2) maximum practicable uniformity between the military departments; (3) centralized and computerized pay account maintenance; and (4) optimum support of the planning, programming, and budgeting systems by producing and making effective use of comprehensive, accurate, and timely accounting reports and other end products. Related goals are (1) to eliminate or reduce erroneous or illegal payments, and (2) to produce from the pay data bank, data and reports now available only through special statistical and reporting methods outside of the pay system.

- B. Initial operation of the Joint Uniform Military Pay System is the first major step of a long-range, evolving program for continuous improvement of the military pay system. This program is oriented toward continuous increases in efficiency and effectiveness, better interface with personnel and other related systems, greater precision in payment and collection actions and related accounting and reporting, and more effective support to military personnel appropriation and resource management systems.¹

From a quick glance at its title, the "Joint Uniform Military Pay System," one would expect that this new program would be a joint effort on the part of the Army, Navy, Air Force, and Marine Corps. In theory this may have been intended, but in practice, nothing could be more incorrect. As expressed in the statements of policy below, each service is to centralize and mechanize military pay functions, but each, also, has the authority to do it in its own way, subject to approval by the Assistant Secretary of Defense (Comptroller).

I will not try to analyze all of the policies set forth by the Department of Defense concerning the development, test, evaluation, installation, and maintenance of the JUMPS program. For appreciation of the depth of the program, however, the major policies are quoted here in part:

1. Each military service will, at a single operating site for each service, establish a master military pay account for each active duty member. This capability may be obtained progressively when

¹U.S. Department of Defense Directive 7330.3 of 4 November 1966, loc. cit.

requested and justified by a military service and approved by Assistant Secretary of Defense (Comptroller). All active duty military personnel, excluding academy cadets and midshipmen, will be included in this centralized master pay account file.

2. Master military pay accounts will be maintained by electronic data processing equipment and techniques. It will have a processing capability consistent with system requirements and a capacity appropriate to programmed service strength, expandable to maximum planned mobilization strengths.
3. Where equipment used for the military pay system services other functions, total workload will be scheduled to provide for contingencies to avoid compromising effective continuity of the military pay function.
4. Military pay disbursing capability will be retained at base and installation level for effecting payments made at that level.
5. Actions and member status changes affecting pay accounts will be input to the military pay system at base, installation, or, other levels by machine-sensible media, wherever practicable, as close to the true source of such input as practicable.
6. Communication methods, including AUTODIN, appropriate for the data involved will be used between disbursement and input sites and the centralized operation. However, the system must be capable of operating by mail.
7. Data elements and related features will be developed so as to be uniform within and between the military departments.
8. Identical forms and procedures will be used by each military service for payments to members of other military services and for reporting such payments to the parent service of such members.
9. Alternate methods for payment of members and allottees will be developed for use when needed because of breakdown or destruction of centralized operations.

10. The cost of operating and maintaining current service military pay systems at all levels will be developed, recorded, and analyzed by each service. As services develop systems implementing JUMPS specifications, each service will develop forecasts of comparable operating and maintenance costs and JUMPS investment costs. These forecasts will be continuously updated as the system is refined and tested and significant cost changes introduced.
11. The operation of an effective, EDP-serviced military pay system, together with the consolidation of all pay accounts by each service, provides potentials for significant improvement in current accounting, budgeting, and statistical data recordation, collection, analysis, and use. For this reason, the Joint Uniform Military Pay System will not be developed and implemented solely as a system for payment of members, with minimal compliance with accounting and disbursing requirements. Rather, military departments will ensure that all affected staffs cooperate in specifying their data needs and in developing the service implementing systems to satisfy these needs effectively and economically. As the system provides the needed data, the traditional methods and reports will be discontinued.
12. The data base used in the system and the system end products will be modified and expanded, in-phase with the refinement of resource management systems. The objectives will be to reduce the detail workload at base and installation level; the JUMPS to provide maximum production and feedback of data needed at all levels for both Military Personnel Appropriation and resource management systems. This will reduce or prevent a proliferation of special accounting or statistical reports to meet other system management needs, wherever the required data can be effectively and economically produced by the pay system.²

In analyzing and projecting the Navy's approach to automation within the objectives and policies set forth above,

³Ibid.

the Office of the Comptroller of the Navy has developed a PERT (Program Evaluation and Review Techniques) Chart concept (Exhibit 1) and established certain milestones to be met (Exhibit 2). Both are working guides and are subject to periodic review and revision. In fact, the current milestone table available begins with August 1967.

An interesting date to note on the PERT Chart is 4 March 1966. At this time the basic JUMPS concepts were released to the services in draft form. It was shortly after this that the Navy started work on the project, fully eight months before the final directive was approved and signed.

Probably the most important date in this latest revision of the system is the implementation date of June 1970. According to the basic Department of Defense directive, implementation was to have been accomplished by 1 July 1969.³ The reason for this delay or non-compliance was not due to a lack of desire to get the program started, but from a lack of response by commercial manufacturers to submit proposals on the optical character recognition equipment (optical scanner).

The JUMPS program in the Navy probably would not have been operational until 1971 or 1972 if it had not started its program development when it did.

Basically, JUMPS in the Navy is the creation of a computerized Master Military Pay Account to which items

³Ibid.

EXHIBIT 1

JUMPS (NAVY) MILESTONE PERT CHART

4th Revision, 9 January 1968

From

Office of the Comptroller of the Navy

JUMPS (NAVY) MILESTONE PERT CHART

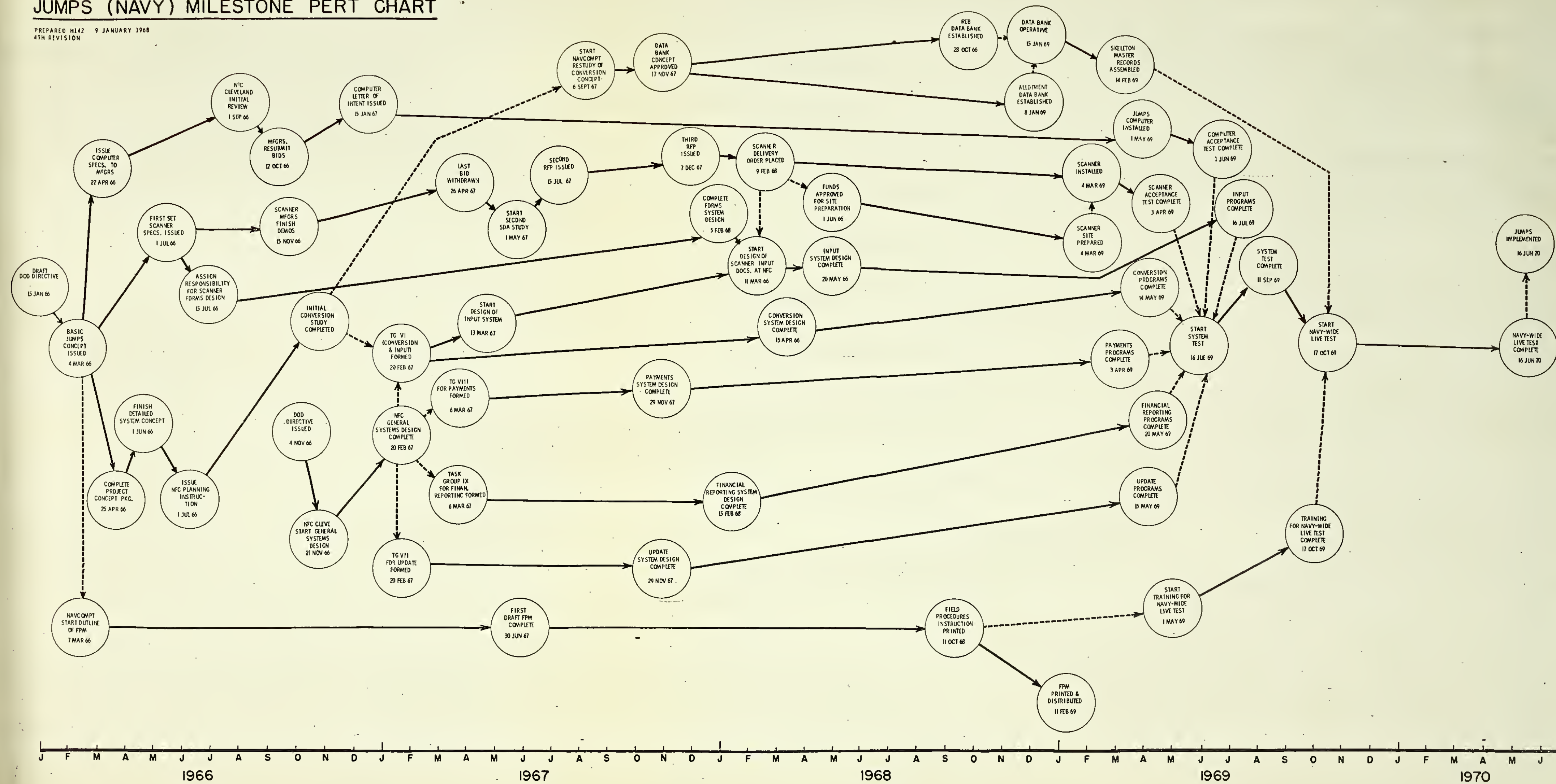
PREPARED H142 9 JANUARY 1968
4TH REVISION

EXHIBIT 2

JUMPS SUMMARY MILESTONES

Revised 22 January 1958

From

Office of the Comptroller of the Navy

JUMPS SUMMARY MILESTONES

REVISED 22 JAN 1968

EVENT TITLE	SCHEDULED DATE	EXPECTED DATE
JUMPS ANALYST AND SR PROGRAMMER POSITIONS STAFFED	30 Aug 67	12 Jan 68
PAYMENTS SYSTEM DESIGN COMPLETE	16 Oct 67	29 Nov 67
FINANCIAL REPORTING SYSTEM DESIGN COMPLETE	17 Oct 67	15 Feb 68
START WRITING FINANCIAL REPORT PROGRAM SPECS	17 Oct 67	15 Mar 68
NAVCOMPT FORMS SYSTEM DESIGN COMPLETE	17 Oct 67	29 Jan 68
UPDATE SYSTEM DESIGN COMPLETE	24 Oct 67	29 Nov 67
START WRITING PAYMENTS PROGRAMS	31 Oct 67	11 Mar 68
SCANNER LETTER OF INTENT ISSUED	24 Nov 67	09 Feb 68
START WRITING UPDATE PROGRAMS	06 Dec 67	11 Mar 68
CONVERSION SYSTEM DESIGN COMPLETE	22 Dec 67	15 Apr 68
START DESIGN OF SCANNABLE INPUT DOCUMENTS	22 Dec 67	11 Mar 68
START PROGRAM SPECS FOR CONVERSION DOCUMENT	23 Jan 68	13 May 68
DESIGN OF SCANNABLE INPUT DOCUMENTS COMPLETE	06 Mar 68	20 May 68
START PROGRAM SPECS FOR SCANNABLE INPUT DOCUMENTS	06 Mar 68	09 Feb 68
FINAL INPUT SYSTEM PACKAGE ASSEMBLED	06 Mar 68	20 May 68
FIELD PROCEDURES MANUAL PRINTED	01 Jul 68	11 Feb 69
SCANNER FORMS PRINTED FOR LIVE TEST	06 Aug 68	23 Jan 69
START TRAINING ALL FIELD ACTIVITIES	11 Oct 68	02 Jun 69
PROGRAMS FOR SCANNABLE DOCUMENTS	19 Nov 68	02 Jun 69
SCANNER INSTALLED AT NFC	22 Nov 68	04 Mar 69
PROGRAMS FOR PAYMENTS SYSTEM COMPLETE	26 Nov 68	03 Apr 69
PROGRAMS FOR FINANCIAL REPORTING SYSTEM COMPLETE	12 Dec 68	20 May 69
SCANNER ACCEPTANCE TEST COMPLETE	26 Dec 68	03 Apr 69
JUMPS COMPUTER INSTALLED	08 Jan 69	01 Apr 69
CONVERSION PROGRAMS COMPLETE	23 Jan 69	14 May 69
UPDATE PROGRAMS COMPLETE	13 Feb 69	15 May 69
START SYSTEM TESTING	07 Mar 69	02 Jun 69
ALL FIELD ACTIVITIES TRAINED	17 Mar 69	01 Sep 69
JUMPS DATA BANK OPERATIVE	---	10 Apr 69
SYSTEM TEST COMPLETE	02 May 69	30 Jul 69
REVIEW AND REVISION OF SYSTEM COMPLETE	19 Jun 69	01 Sep 69
CONVERSION DOCUMENTS SENT TO FIELD FOR LIVE TEST	19 Jun 69	01 Sep 69
START NAVY-WIDE TEST	01 Jul 69	01 Sep 69
FIRST LEAVE & EARNING STATEMENT FOR LIVE TEST ISSUED	01 Nov 69	01 Nov 69
JUMPS IMPLEMENTED (Conversion Cut-Off Date)	01 Feb 70	01 May 70

affecting pay and allowances are constantly being programmed to maintain the account in an up-to-date status. Outputs from this updated account will provide for payment of military personnel along with furnishing each member a periodic Leave and Earnings Statement. Management reports for fiscal, budgeting, and resources management areas will not only be important factors, but are considered by some people to be the foremost reasons for JUMPS inception in the first place.

Although it is not a basic objective of the program, it is not beyond the realm of reason to predict that this is the first major step toward the "complete" integration of the pay and personnel records of the active military personnel. The inputs to the system currently scheduled to be provided by the Bureau of Naval Personnel certainly lend themselves to the concept of a "master record" for each member.

To implement this broad program will require the conversion of all the current active duty pay accounts from their present hard-copy form to the Master Military Pay Account maintained by the central computer, an IBM 360-50, for which the conversion program as well as the processing programs will be written in COBOL automatic coding language.⁴

The actual implementation will start in October 1969 by testing the entire system, first, with a minimal number of

⁴Ralph M. Christensen, Office of the Comptroller of the Navy (Data Processing Systems Division), Personal Interview, 12 February 1968.

pay accounts, about 20,000 officer and enlisted. Then, if successful, the balance of the officers' accounts will be added. This will be followed by enlisted accounts E-6 through E-9, and then E-4 and E-5. Finally, all non-rated enlisted members' accounts will be added to the system.⁵

The choice of the IBM 360-50 computer, or for that matter, all of the automatic data processing equipment involved in the JUMPS program has been made by the recently created Automatic Data Processing Equipment (ADPE) Office in the Department of the Navy. This Office, under the very able guidance of the Special Assistant to the Secretary of the Navy, Mr. Norman J. Ream, has been assigned the mission of evaluating and selecting automatic data processing equipment, including procurement and contracting functions for the Department of the Navy.⁶

Each selection action required of the ADPE Selection Office is assigned to a Source Selection Evaluation Board, which develops an evaluation plan and prepares the approved specifications, the Requests for Proposals, and solicitation letters for issue to qualified suppliers.⁷

Membership of the evaluation board consists of personnel from various divisions of the ADPE Selection Office, and includes the Contracting Officer. More importantly,

⁵Ibid.

⁶Gerald D. Sylvester, "Navy Activates New Automatic Data Processing Equipment Selection Office," Navy Management Review, NAVSO P910. Vol. XII, No. 9, September 1967, p. 6.

⁷Ibid. p. 7.

however, personnel from the activity within the Navy which is requesting the equipment are also members of the board.

With cooperation such as this from the very beginning, the selection of the proper type of equipment is virtually assured with the agreement of all concerned--especially the users.

With the accelerated growth in the number of computers used by the Federal Government (10 in 1954 to over 2,600 in 1967), the development of an activity such as the ADPE Selection Office should bring about increased efficiency and effectiveness in the automatic data processing field.⁸

As previously mentioned, the Navy learned from its experiences in 1961 and 1962 to plan carefully and devote extra attention to seemingly minor details when it comes to the development of a new automated system. For JUMPS one can look at this planning and the results in three separate, yet highly coordinated phases: first, the development of a source data automation (SDA) system; second, the centralized processing and maintenance of the Master Military Pay Account; and, third the output phase in which the products available will be utilized in various financial programs. Each of these aspects will be discussed.

⁸Norman P. Adelson, "ADPE Selection Office to Apply New Approach to Navy Computer Procurement," Navy Management Review, NAVSO P910. Vol. XII, No. 9, September 1967, p. 10.

CHAPTER IV

MECHANICS OF DATA INPUT AND CENTRAL PROCESSING

Source Data Automation

The keystone of a sophisticated centralized military pay system, or for that matter, any centralized computer operation, is a fully compatible and accurate collection of data to be used in the system.

To obtain this compatibility and accuracy, the Navy will embark on a source data automation program employing the use of an optical character recognition system (optical scanner) as the bridge from the document to the computer.

The Bureau of Naval Personnel has been interested in the development of an optical scanning system for several years, so, with the implementation of the JUMPS program, the door was opened to automate various personnel records at the bureau level and also provide the necessary input for the central computer operation in Cleveland.

The realization that the volume of source documents in the Navy which contained both pay and personnel information, was in excess of one million documents per month, containing approximately 182 million typed characters, led to an exhaustive study which eventually recommended the optical character

recognition approach.¹

The decision to pursue the optical scanner method of source data automation came only after the restrictions implied in the JUMPS directive were considered in the light of the various alternative methods of source data automation available. The limiting restrictions considered are described below:

1. Manual intervention will not be required once the input data is automated.
2. When input material for JUMPS exists in a machine-sensible medium, it will be utilized without manual intervention involved with recoding the information and additional reduction to a machine-sensible medium. For example, when an event occurs which affects both the personnel and pay systems and is reported to the personnel accounting system in machine-sensible form, it will not be reported separately to the pay system by the generation of separate or additional information.
3. Transcription of information from form to form is to be avoided. When a form is prepared and it is to be a source document, it will be prepared in machine-sensible language or format.
4. All applicable data will be automated as closely as possible and practical to the source of the event

¹U.S. Department of the Navy, Joint BuPers/NavCompt Study of Source Data Automation Methods, 31 May 1967, p. 8.

creating the data. Every effort will be made to eliminate human intervention (and error) between the two separate processes of preparation of a source document and posting of the required data to the individual master military pay account.

5. Combinations of devices and techniques for automating input data should be utilized where the nature of the event and/or the environmental conditions of the service make the use of any single device or technique for automation impossible or impractical.
6. The systems and procedures developed by each service should utilize the greatest degree of modern equipment and techniques possible for input automation; and should also be flexible to the extent that continuing improvement in input procedures will be made even beyond the implementation data for this system.
7. If an event affects both personnel and pay accounting, no duplication of effort should occur when automating the input data.
8. When a document is prepared to announce an event, no additional transcription should be made onto a different input form. An example of this is in the promotion of an officer. Promotions are prepared centrally in the Bureau of Naval Personnel. If that source document were prepared in a machine-

sensible medium, it could be transmitted into the system without any further transcription to a "carrier" document.²

The study itself, as conducted by the Joint BUPERS/NAVCOMPT study group, included the following alternative choices: key punching at central locations, decentralized key punching, typing for single font optical scanning, read/write/punch (flex-o-writer), mark sensing, embossed plates (imprinted for optical scanning), recording data directly to magnetic tape at central locations, recording data to machine language via Cathode Ray Tube (CRT) visual display unit, and multi-font optical character recognition.³ There were several other methods which were briefly examined, but not considered feasible because of the early stages of development or the requirement for an extensive communications network. None of these latter methods would fit into the time frame necessary to implement JUMPS.

Since the development of source data automation is so vitally material to the success of the JUMPS program, and in turn to the various programs which depend on JUMPS for their input data, it is important to review the various alternative methods mentioned above. It is known that optical scanning in some form will be used, however, it is essential for complete understanding of the system, to see why the other methods were

²Ibid., p. 1.

³Ibid., p. 7.

not chosen, and if the choice, in the final analysis, was a correct one.

Key Punching at Central Locations: This system requires each activity to forward its source documents to a central location for transcription, coding, editing, and punching into machine readable cards. The central locations for the Navy are the Navy Finance Center in Cleveland and the Bureau of Naval Personnel in Washington, D.C.

This method was rejected for the following reasons:

1. Data is not automated simultaneously from a source document. It must be transcribed, coded, and edited.
2. It represents a duplication of effort by key punching previously typed data into a card along with the preparation of transcription sheets, coding, editing, and verifying.
3. Space requirements for equipment at a central key punch site would be substantial, as would the costs of labor and training.
4. The throughput rate is not sufficient on key punch equipment to do daily processing of the number of documents involved.
5. Clerical support costs would be high because of the additional operations at the central location such as sorting, control, transcription, coding, editing, balancing, and error resolution.

6. Problems could be encountered further in the labor, equipment, and space requirement areas in case of a full mobilization.
7. Key punching with its various steps is an expensive method of automation.⁴

Translating the above reasoning into hard cash, space, and bodies shows even more vividly why this plan is not practical. The detailed cost analysis, as shown in Exhibit 3, will not be presented in succeeding systems descriptions, as many of the basic costs are the same. It is presented here in this first system to illustrate how one arrives at various costs involved. There will, however, be summarized costs for each system which was considered as an acceptable method.

Decentralized Key Punching (Key Punching at Each Reporting Unit): The key punching process, whether centralized or decentralized, involves transcription, coding, and editing of information which has previously been prepared by typewriter or in long hand. The information once transcribed, coded, and edited is duplicated on an electric accounting machine (EAM) card by a key punch operator. This card is then checked for accuracy by means of a repunch process in a key punch verifier. This system, by the way, is an integral part of many present day automated systems, such as inventory control.

When taking into consideration the magnitude of the JUMPS program, however, decentralized key punching has some

⁴Ibid., p. 12.

EXHIBIT 3

COST ANALYSIS OF KEY PUNCHING
AT CENTRAL LOCATIONS

From
Joint BuPers/NavCompt Study of
Source Data Automation Methods
U.S. Department of the Navy

COST ANALYSIS OF KEY PUNCHING AT CENTRAL LOCATIONS

I. Equipment Requirement Rational			
A. One-time Purchase Costs:			
1. Key Punch	-	-	- 143 units x \$3,278.....
2. Key Verifier	-	-	- 96 units x \$2,200.....
			Total Purchase Cost.....
			\$168,754
			211,200
			<u>\$679,934</u>
B. Recurring Annual Maintenance Costs:			
1. Key Punch	-	-	- 143 units x \$270/year.....
2. Key Verifier	-	-	- 96 units x \$378/year.....
			Total Maintenance Cost.....
			\$ 38,610
			36,273
			<u>\$ 74,883</u>
C. Card to tape annual processing costs (based on processing rate of 600 words/minute and a required processing time of 84.4 hours/month for 182,200,000 input data characters):			
<u>182,200,000 characters/month</u>			
60 characters/card = 3,037,000 cards/month			
<u>3,037,000 cards/month</u>			
36,000 cards/hour = 84.4 hours/month			
84.4 hours/month x \$20 processor rental/hour.....			
\$1,688/mo x 12 mos.....			
Total Machine Rental & Maintenance Costs.....			
Total Purchase, Rental, & Maintenance Costs.....			
			\$ 1,688
			20,256
			<u>\$ 95,154</u>
			<u>\$775,108</u>
II. Space Requirement Rational (estimated)			
A. Labor/equipment space (30 square feet/operator and 50 square feet/clerk):			
1. 30' x (143 - 96).....			7,170
2. 50' x (430 clerks).....			21,500
Total Space Required.....			28,670 square feet
28,670 square feet x \$4/year rental & upkeep*.....			
(*U.S. General Services Administration Notice FPMR 7, 15 June 1965. For planning only, no charge levied in a Federal Building.)			
			<u>\$115,000/yr</u>
III. Labor Requirement Rational			
A. Key punch, key verifier operators, and clerks requirements based on averages experienced at various activities. No set standard is available.			
1. Key Punch Operators (based on 8,000 strokes/hour)			
<u>182,200,000 input characters/month</u>			
64,000 strokes/day (8,000 x 8 hours) = 2,847 man days			
Average work days per month = 22			
<u>2,847 man days</u>			
22 work days/month = 130 - 13 (10% leave factor) = 143 key punch operators			
2. Key Verifier Operators (based on ratio of 2 verifiers for each three key punches)			
2.3 of 143 = 96 Key Verifier Operators			
3. Data Preparation Clerks (experience has shown the ratio of clerks to key punch operators is over 3 to 1):			
143 x 3 = 430 data processing clerks (minimum)			
B. The estimated annual cost of these three groups computed on the basis of a fourth Step in Civil Service pay for GS-02 & GS-03 personnel plus an 8% fringe benefit factor is approximately.....			
			<u>\$3,309,000/yr</u>
V. Summarization of Costs:			
A. First year estimated cost:			
Equipment.....			\$ 775,108
Space.....			115,000
Labor.....			3,309,000
			Total
			<u>\$4,199,108</u>
B. Recurring Annual Costs after first year:			
Equipment.....			\$ 95,154
Space.....			115,000
Labor.....			3,309,000
			Total
			<u>\$3,519,154</u>

very limiting features and was thus rejected. The specific reasons for rejection of this system were:

1. It would be necessary to acquire key punch and verifying equipment for 4,300 reporting units. Aside from the tremendous number of units, the cost for this system would be in excess of \$6 million for annual rental or \$40 million for purchasing outright.
2. Data is not automated simultaneously from the source document. It is transcribed, coded and edited.
3. Another cost factor is that it is not an economical operation for approximately 70% of reporting Navy units. The machine could never be fully utilized.
4. The key punching system represents a considerable increase in workload for the local activity over the present method of typing input, as it involves a transcription sheet, coding, editing, key punching, and verifying. The source document must still be prepared in all cases.
5. Errors on submitted EAM cards could not be corrected at the computer site and would have to be returned to the ship or station for resolution, resulting in extensive time lags.
6. There could be considerable maintenance and training problems involving mobile and overseas

units and a highly transient work force.⁵

Typing for Single Font Scanners - Centrally: Documents to be read by a single font optical scanner must be typed on a single, standard font typewriter. This font basically is designed for machine recognition, but may still be legible to the human eye and has only recently been adopted as the standard font throughout the Optical Character Recognition industry.⁶

The advantages of this centralized method are:

1. Labor costs are considerably less than those associated with a centralized key punch operation.
2. Careful control of input data is assured - a factor which would be of considerable importance during the implementation phase of JUMPS.
3. Forms design changes would not entail a major training effort, since only the typists at the central location would be effected.
4. Problems concerning forms design, procedures and system weaknesses could be resolved at the central location more expeditiously.⁷

Although these advantages are noteworthy, this concept was rejected by applying almost identically the same rational used to reject the centralized key punch operation.

⁵Ibid., p. 10.

⁶Ibid., p. 7.

⁷Ibid., p. 16.

The disadvantages are:

1. Data is not automated simultaneously from the source document, hence a duplication of effort.
2. Throughput rate is not sufficient to do daily processing.
3. Space requirements of a centralized typing pool would be substantial.
4. Labor costs and training costs parallel those of the centralized key punch system, and are not feasible.
5. Clerical support would be high due to additional operations, such as sorting, control, pre-determined totals, balancing and error resolution.
6. Labor, equipment, and space requirements in case of mobilization would be out of all reason.
7. A centralized typing pool would add a significant amount to the gross costs of labor and equipment for the total system.⁸

The estimated costs to cover the requirements of this system are:

1. First year (including purchase):

Equipment.....	\$1,627,000	
Space.....	107,000	
Labor.....	2,675,000	
Total first year cost		<u>\$4,409,000</u>

⁸Ibid., p. 17.

2. Recurring annual costs:

Equipment.....	\$ 79,000	
Space.....	107,000	
Labor.....	2,675,000	
Total recurring annual cost		<u>\$2,861,000⁹</u>

• Read/Write/Punch: A read/write/punch system was considered as a possible solution to the problem, in that it took care of several steps in one operation. The typewriter would be synchronized with a paper punch machine to handle both the typed document and a punched paper tape from the same stroke.

This method was rejected because:

1. The logistics problem (additional equipment) created upon mobilization.
2. The requirement for highly technical maintenance service (usually not available to sea and overseas units).
3. The actual increase in workload on the machine operators and the extensive training required for the operators.
4. The cost of the system for a Navy-wide application.
4300 Navy Units x \$3,500/machine = \$14,700,000
(plus additional machines at larger activities)¹⁰

Mark Sensing: Mark sensing is a system in which designated segments on a form are marked by a lead pencil, similar to an answer sheet for a multiple choice, true-false examination; a system employed by the Bureau of Naval Personnel

⁹Ibid., p. 17.

¹⁰Ibid., 23.

for several years.

This system was rejected because it represented an increased workload, lack of accuracy, limited alpha capability, and an increased volume of forms needed.¹¹

Recording Data Directly to Magnetic Tape at Central Locations: Recording data directly to magnetic tape is an operation similar to the centralized key punching system, with the data generated on tape instead of a punched card.

Although, it has some time advantages over the key punching method, it was rejected because overall it offered no monetary or auditing advantages over the key punching method.¹²

Recording of Data Via Cathode Ray Tube Visual Display Unit: This method of source data automation was approached from two aspects:

1. Decentralized recording of source data with centralized storage by a process computer.
2. Centralized recording of data on a centralized process control computer.

The first approach requires an interface with data-phone communications systems which are not available in all geographic areas applicable to the JUMPS input system. For this reason alone, this possibility was rejected.

¹¹Vivienne M. Puzin, Personal Interview, loc. cit.

¹²U.S. Department of the Navy, Joint BuPers/NavCompt Study of Source Data Automation Methods, loc. cit.

¹³Ibid., p. 28.

The second approach utilizes the end product of decentralized typing of source documents which are automated centrally and keyed into Cathode Ray Tube (CRT) display devices. This method was rejected because of its current pilot project status and the fact that it could not fit into the time frame for the implementation of JUMPS. There was no cost study conducted at this time.¹⁴

Embossed Plates: The embossed plate method accomplishes the transition of input data to machine sensible language without key punching and its associated workload. Simply stated, each of the more than 4300 reporting units would be required to maintain a data bank of over 500 embossed plates, each representing a separate pay and/or personnel action. All military personnel would also be represented by an embossed identity plate. A combination of action plates and the individual's identity plate are assembled and imprinted to create a document for every pay or personnel action. The completed document would be sent to a central optical scanner sight to be read and processed to the computer.

This system was rejected as unacceptable because of the problems envisioned with maintenance and replacement of plates, the time factor involved in assembly, and the logistics problems for the remote or afloat units. The loss of cards, breakdown of equipment or changes in plate format could result in intolerable delay in receipt of pay entitlements to

¹⁴Ibid., p. 28.

personnel of such units. A cost study was not conducted for this method.¹⁵

Multi-Font Optical Character Recognition System: The multi-font optical character recognition system is a method in which ordinary typed source documents can be submitted to a central location for processing through optical character recognition equipment which reads and transforms the information to a machine-sensible language for direct introduction into a computer via magnetic tape. The input is prepared on existing typewriter equipment, which eliminates the need for specialized equipment at the original activities.

Here, too, is a system which, although, extremely desirable, is not developed to the point that it would meet the time limits required. It may, however, be an acceptable vehicle for JUMPS refinement in years to come.

The estimated costs for this system are approximately \$4.8 million in the first year with recurring annual charges of about \$1 million.¹⁶

Decentralized Typing for Single Font Optical Scanning: This is the system that the Navy has decided to utilize in its initial entry into this centralized pay field. After consideration of all methods above, it was concluded that at this time the only vehicle suitable to process the JUMPS workload accurately and on a timely basis would be the decentralized

¹⁵Ibid., p. 25.

¹⁶Ibid., p. 31.

typing of the source document with centralized single font optical scanning.

The advantages of this system are:

1. Machine-sensible data is produced simultaneously from document, and transcription from form to form is avoided. Data is automated at the source.
2. The use of a typewriter as the input medium (the most common of all office machines) provides system flexibility not possible with other methods discussed.
3. Minimal training would be required, as the preparation of input is similar to current procedures.
4. Labor and space requirements are not changed appreciably from what now exists.
5. Logistics problems are limited to provision of forms and replacement of typewriters.¹⁷

This system is not without some disadvantages. It is felt, however, that the ultimate adoption of the multi-font scanner will alleviate most of these problems.

One pressing problem at this time is the replacement of typewriters at the various disbursing and personnel offices to be compatible with the centralized single font scanners. Estimates in this area range from about \$1.5 million to well over \$6 million. Without creating a back-breaking chore

¹⁷Ibid., p. 19.

cost-wise, changeover to the acceptable typewriters should begin immediately. The Navy normally replaces a goodly number of machines each year. By concentrating their replacement in the disbursing and personnel areas, the greatest majority of activities could be ready for the JUMPS implementation date long before the required deadline. The impact of a onetime purchase could then be averted.¹⁸

Discounting the cost of typewriter replacement to the JUMPS program (it is normally a station maintenance fund charge), the cost of the single font optical scanner system is about:

1. First year cost:

Scanner & maintenance.....	\$1,575,000	
Space.....	13,000	
Labor.....	120,000	
Total first year.....		<u>\$1,708,000</u>

2. Recurring annual costs:

Equipment & maintenance.....	\$ 75,000	
Space.....	13,000	
Labor.....	120,000	
Total annual recurring cost		<u>\$ 208,000¹⁹</u>

Basically, the overall source data automation concept includes utilization of two separate optical character recognition systems for inputs. One will be located at the central payment site at the Navy Finance Center, Cleveland, Ohio, and

¹⁸Ralph M. Christensen, Personal Interview, loc. cit.

¹⁹U.S. Department of the Navy, Joint BuPers/NavCompt Study of Source Data Automation Methods, loc. cit.

will process all documents received from field disbursing officers. The second scanner system will be employed at the Bureau of Naval Personnel in Washington, D.C. for processing personnel documents. Those documents having both pay and personnel applicability will be scanned by one or the other activity, with magnetic tape input going to both pay and personnel data banks. An example of this is the promotion of an individual, with the document originating at BuPers, where it is scanned and transported by magnetic tape to Cleveland. The information is also fed into the BuPers personnel computer to update the member's official personnel record.

At each site, a document will be completely read in one pass with the optical character recognition controller program deciding if it contains pay, personnel, fiscal/budget implications, or all of these. When the system's implications have been analyzed, the data will be subjected to a validity and consistency check applicable to each system. Once determined valid and consistent, the data will be reformatted by internally stored editing routines into output tape formats compatible with the separate pay, personnel, and fiscal budget data information systems. A more detailed explanation of what actually happens to the input documents information will be treated below in the discussion of the Master Military Pay Account.

Exhibit 4 provides a quick comparison of costs involved in the various systems discussed herein. It should be noted that the eventual use of a multi-font scanner system, once it

EXHIBIT 4

PURCHASE COST COMPARISON
OF
SOURCE DATA AUTOMATION METHODS

From
Joint BuPers/NavCompt Study
of
Source Data Automation Methods
U.S. Department of the Navy

EXHIBIT 4

PURCHASE COST COMPARISON OF SOURCE DATA AUTOMATION METHODS

	<u>Equipment (Pur)</u> <u>Thousand</u>	<u>Space</u> <u>Thousand</u>	<u>Labor</u> <u>Thousand</u>	<u>Total</u> <u>Million</u>
Decentralized Key punching	40,000	*	*	40.0
Key Punching at Central Location	775	115	3,309	4.2
Typing for Single Font Optical Scanning at Central Locations	1,627	107	2,675	4.4
Decentralized Typing for Single Font Optical Scanning **	1,575	13	120	1.7
Read/Write/Punch	14,700	*	*	14.7
Mark Sensing	(Not an Acceptable Method)			
Embossed Plates	(Not an Acceptable Method)			
Recording Data Directly to Magnetic Tape at Central Locations	(Not an Acceptable Method)			
Recording Data to Machine Processing Language via CRT Visual Display Unit	(Not an Acceptable Method)			
Multi-Font Optical Character Recognition System	3,950	26	818	4.8

Cost Estimates Not Computed
Due to Excess Equipment Costs.

* Does not Include Typewriter
Procurement.

is materially feasible, is only slightly more expensive than the centralized key punching system or the typing proposed at a central location for single font scanning.²⁰

Centralized Processing

The Master Military Pay Account will be the heart of the JUMPS program in the Navy. In essence, it will include all items of military pay information applicable to all active duty military personnel in the Navy. Into this account will be programmed (via the optical character recognition method described above) all credits or entitlements and checkages or deductions which will affect the individual member's account. From it, one will be able to obtain the military pay for the members, allotments to families and banking institutions, leave and earning statements, Social Security and federal income tax information, fiscal and budget programming information, and management reports for the Resources Management System.

The entire central system content is built on the concept of reporting pay information to the central computer with the computer then determining what program action is necessary. The computer is not instructed what to do, it decides what to do.²¹

In the initial planning phase and prior to the actual writing of the various programs for the central processor, the

²⁰ Ibid., p. 38.

²¹ Clyde E. Gartley and Frank S. Jacobs, "A Mechanized Military Pay System," Navy Supply Corps Newsletter, Vol. XXX, No. 5, May 1967, p. 4.

personnel responsible for JUMPS implementation, at the Navy Comptroller's level, have been developing a series of JUMPS Decision Logic Tables.²² Each table represents a detailed study of a single item of military pay to determine the conditions of entitlement and substantiation that exist or are required for that item.

As shown in Exhibit 5, the Decision Logic Table for Officer Promotions, each item of entitlement is treated under the various conditions which may have an effect on the member's entitlement to that item of pay.²³ It further indicates the type of substantiation required for the various conditions, where the substantiation comes from, and the result in the member's pay account.

Implementation of the initial Master Pay Account will require an extensive data conversion program for all the pay data presently recorded on the individual military pay records, and for the leave and reenlistment bonus information in the individual service record. This effort will be reduced considerably, however, by obtaining a great proportion of the information from currently existing Bureau of Naval Personnel and Navy Finance Center, Cleveland, tape files. Anything not obtainable from these sources will have to come from the local

²²U.S. Department of the Navy, Office of the Comptroller (NCFS52S), Memorandum For the Assistant Secretary of Defense (Comptroller), dated 15 October 1967, Enclosure 1, p. 1.

²³Ibid.

EXHIBIT 5

DECISION LOGIC TABLE

FOR

OFFICER PROMOTIONS

From

Office of the Comptroller of the Navy

C O N D.	A D D I T I O N A L R E F.	B u n d l e	C o n t e n t	D e t a i l s	E x p l a n a t i o n
1.	Rule 2	becomes entitled to pay of rear admiral (upper half)	37 USC 202 (a)-(e)	the promotion is effective for pay purposes on the effective date stated in the BUPERS notification letter to the officer;	the increased pay will be credited on his pay account based on info from BUPERS to NFC CLEVE
2.		is entitled to basic pay of rear admiral (upper half) while serving in a designated position	37 USC 202 (h)-(j)	date officer assumes the designated duty (unless already entitled to that or a higher grade under another appointment);	on relief from designated duty (NOTE 2)
3.	Rule 3	is designated for special assignment, thereby promoted to rear admiral or vice admiral while so serving	10 USC 5231	date officer assumes the designated duty if he has accepted appointment to the higher grade as of that date;	if officer accepts his appointment after assuming the designated duty, and on relief from designated duty (NOTE 2)
4.		is promoted to higher grade while holding certain position	10 USC 704 (White House physician), 5139 (Chief, NSC), 5140 (Dir. NC), 5043 (Dir. WAVES)	date detailed to position or appointed by SECNAV;	on relief from designated duty (NOTE 2)
5.		is promoted to a higher grade	constitutional authority	date officer accepts his appointment;	Acceptance of Appointment (BUPERS info to NFC CLEVE)
6.	Rule 4	is promoted to higher grade (except ensign to lieutenant (jg))	10 USC 563, 5505, 5751-5774, 5787, 5787b, 5787c, 5788, 5902, or 5910	effective date stated in BUPERS notification (NOTICE 1421 series, or individual letter);	advance info from BUPERS to NFC CLEVE
7.		is promoted from ensign to lieutenant (jg)		completion of number of month's service as required by current SECNAV directives, 1412.6 series;	if promotion is withheld (NOTES 3 and 4)
8.	Rule 5	is promoted to a higher grade	10 USC 5596, 5784, or 5787a	date officer accepts his appointment	Acceptance of Appointment (BUPERS info to NFC CLEVE)
9.		is given a temporary "SPOT" promotion to a higher grade (SECNAVINST 1421.3 series)	10 USC 5787	effective date stated in BUPERS appointment letter	advance info from BUPERS to NFC CLEVE

NOTE: 1. BUPERS will furnish identifying data on these officers. 2. NFC CLEVE will revert the pay of these officers to that of the proper grade upon relief from that duty, based on info from BUPERS. 3. If DO is aware that promotion is withheld, he will not pay officer at the higher grade. 4. If officer is promoted within 60 days, pay is retroactive to original eligibility date; if promoted after 60 days, BUPERS will issue appointment effective as of current date. 5. Pay of the higher grade will continue on reassignment unless BUPERS advises NFC CLEVE that reversion is required (officer not on promotion list).

disbursing and personnel officer, and this, too, can be automated by preparation of a special report document that can be scanned by the optical character recognition unit at the central site.²⁴

After the original Master Pay Account is established, the greatest majority, in fact probably over ninety percent of inputs to it will be processed through the optical character recognition unit on a batch or group-feed basis.

The input data documents, with a letter of transmittal, will be batched by transaction and system (pay or personnel) type at the field disbursing and personnel offices. Pay documents will not be intermixed with personnel documents, but pay information contained on a personnel document sent to the Bureau of Naval Personnel will still reach Cleveland in tape form at a later date. The reverse is true of a document which is primarily pay oriented but contains personnel information.²⁵

When received at the central site, each batch is placed in a serial numbering device which imprints a document control number on each document including the letter of transmittal. The batch is then loaded into the optical character recognition equipment for processing.

Should it be possible to include the serial numbering

²⁴Raymond H. Frederick, Office of the Comptroller of the Navy (Data Processing Systems Division), Personal Interview, 14 February 1968.

²⁵U.S. Department of the Navy, Project 007-67, Optical Character Recognition Acquisition for United States Navy, Automatic Data Processing Selection Office, December 1967, Attachment 2, p. 4.

device as an integral part of the optical scanning equipment, the above step would be saved. Documents could be unpacked and immediately loaded into the scanning equipment.

Once at the optical scanner, the letters of transmittal will be the first document fed into the reader. The preprinted identifying form number is read first, causing the Central Processing Unit to execute the appropriate control program for that particular document. The contents of the transmittal document will be stored until the complete batch has been processed in order to allow batch checking. For example: The letter of transmittal for a batch of documents will contain the total number of documents included in the batch. After all documents have been processed, the actual document count will be compared with the stored total from the letter of transmittal. Any out-of-balance condition will immediately produce a print-out identifying the batch, its originator, and the discrepancy.

The first line on each data document following the letter of transmittal will also contain a preprinted form identification number which will cause the central processing unit to access and execute the appropriate program for each type of document. Each program will contain "read" instructions for the lines and fields within each line to be read, validity and consistency checks, arithmetic checks on money totals and subtotals, formats or output tapes, batch checking, and error print routines for batches out of balance. The document

number stamped at the time the batch was loaded will also be read for record identification.

The valid documents will be written in two or more output tapes in distinctly separate formats (depending on the output program affected) and the completed (accepted) document will be deposited in an "accept" output hamper.

Invalid documents, those with rejects or with data which has failed editing checks, will not be written on tape until corrected. These documents will flow to a "reject" hamper with some form of output from the printers indicating what is wrong with the document.²⁶

Of course, a lot of this is conjecture. What should be done, as envisioned now, and what will actually be done on the implementation date may vary considerably. One thing is very clear, though, control must be maintained throughout this batch reading process. The batch overall totals must consist of a minimum count of at least the following: A document count from the letter of transmittal; item count of documents read; an accepted document count; a count of documents to be corrected or retyped; and an edit reject document count. The output from the printer generated for each document rejected or containing a discrepancy will probably be the equivalent of at least one printed line.

As presently contemplated and as proposed to prospective vendors, the central system equipment configuration must have the capability to process the total monthly volume in excess

²⁶Ibid., p. 5.

of one million documents in 176 operational use hours per month.²⁷ This 176 hours is the equivalent of twenty-two working days of eight hours each, each month. If held fast to this mandatory requirement, the Navy possibly could acquire more hardware than is really necessary to do the job, and at higher costs.

At first, one might logically think that these operations could be maintained on a shift basis in a smaller area with a cost savings in machinery outlay. The mandatory requirement for the capability for module expansion, however, must also be maintained to facilitate further system development and refinement, along with future expansion in case of mobilization. Also, there is a considerable cost differential when personnel are required to work on a shift basis. As mentioned above, much of this, too, is conjecture, and as the system becomes operational many changes will occur, all with one goal in mind, the refinement of a system that is predicated on, by, and for service.

There are certain basic processing elements and characteristics that must be present for this system to work despite what the final decision may be concerning the configuration. Briefly, these elements are:

1. The optical character reading system must have the capability of comparing data fields against predetermined constants or stored relationship requirements and then of executing different

²⁷Ibid., p. 13.

sequential steps based on a greater than, less than, or equal to condition.

2. The Central system must have sufficient core storage capacity and a computer instruction set available in it to accomplish any necessary program assemblies. Utilization of another computer system for the purpose of assembling, compiling, testing, editing, or producing tapes should not be necessary, nor is it desired.
3. The system naturally must be capable of performing arithmetic operations of addition, subtraction, multiplication, and division.
4. All peripheral equipment must be controllable from the central processing unit.
5. In addition to the core memory which will be required for any proposed software, there must be enough core storage to handle the Navy's programs.
6. An on-line console typewriter for operator control must be provided with capability for retention of a permanent record of operator-computer communication. The typewriter must, further, be capable of performing input and output functions and must include the ability to load data into or modify data located in memory.
7. There must be a minimum of at least two magnetic tape units for the system with the capability of reading and writing at least nine channel tapes.

The IBM 2400 Series tape units are currently in use at various activities, such as the Bureau of Naval Personnel, which could furnish information to or receive information from this system.

8. A high speed printer must be provided and must be capable of producing machine readable copy in a font that is compatible with the optical character recognition unit.
9. There must be immediate access storage of sufficient capacity to store the program library and all data.
10. There must be a serial numbering device. This has already been discussed above.
11. There must be a method of re-entry for character rejects.
12. Particular elements as applied to the optical character recognition unit include the capability of feeding documents of varying sizes, a re-scan feature, the ability to detect a double feed or misfeed, a minimum of two output pockets or hampers, and the capability of reading characters as specified in the USA Standard Character Set for Optical Recognition.
13. The system must have the capability of modular expansion.
14. The equipment installed at each site must be capable of processing the full range of programs

of the other site through program exchange.²⁸

The final realization of this centralized concept has required a mountainous amount of planning up to this point. From here on, coordination of all efforts in the proper direction will be the key to the success of the system. The Navy knows what is required and what facilities are available. It is now just a matter of bringing all of these facets together into a smoothly working organization.

²⁸Ibid., p. 16.

CHAPTER V

PRODUCTS OF THE SYSTEM

Of all the outputs or products expected to be derived from this centralized military pay system in the Navy, those items which actually affect the individual member's personal finances will, in the long run, probably receive the least amount of Command attention. If, however, the Planning, Programming, and Budgeting System within the Five Year Defense Plan, and the more recent Resources Management System, which is just coming into being, have the proper management and the expected results, there may be a very definite and noticeable effect on the individual--military or civilian. Hopefully, the greater efficiency provided by the system will reduce the amount of his tax dollar that must be allocated for maintenance of the defense establishment.

One must also consider the accrued accounting concept in the discussion of outputs. One may be sure that this is a program which will receive considerable emphasis, especially since it has taken the Navy so long to be in a position to comply with the requirements for this system. The various products of the system are discussed below.

Products Affecting the Individual Member

Immediately after the Master Military Pay Account has been established, the first output from it will be the

individual Leave and Earnings Statements. These forms will be sent to the disbursing office serving the individual's command for verification by the member and the disbursing officer.

After this initial run is distributed, the central computer will continue to prepare a new statement each month; and in addition, it will prepare a new statement when a member reports to a new duty station on permanent change of station orders, and when an account is terminated. A new statement is also prepared when an account is initially established for a new member.

Two copies are forwarded to the disbursing officer. One, the original, is to be delivered to the member; the other is retained by the disbursing officer and is the basis for the "Payroll File" which he maintains locally. The disbursing officer updates his Payroll File each month with the receipt of the latest Leave and Earnings Statement. A third copy of the Leave and Earnings Statement is retained at the central site and forms the basis for the "Individual History File." This file contains information concerning each member for all periods prior to that maintained in the current Master Military Pay Account and will not be substantially different from the historical file presently maintained at the Navy Finance Center, Cleveland.¹ In all probability this third copy will not be a carbon copy at all, but rather a magnetic tape or some other means of mechanized storage.

¹Clyde E. Gartley and Frank S. Jacobs, loc. cit., p. 6.

The Leave and Earnings Statement (Exhibit 6) will contain such information as, when it was printed, and what period it covers, the member's name, and identifying service and Social Security account numbers. It also will contain an accounting of all continuing and one-time entitlements and deductions, a record of any payments made during the current period, current amounts due either to the member or to the government, taxable wages earned and paid, taxes withheld, leave earned and taken, and leave balance. In the case of enlisted personnel it will indicate prior reenlistment bonuses paid and recouped, if any.²

A "norm" pay or normal pay figure will also be printed indicating what could be paid to the member during the next two pay periods. These figures are given, so that any breakdown in communications between the local disbursing office and the central computer will not prohibit the individual members from being paid on time. It further gives the disbursing officer the capability of paying a special pay to a member on a day other than payday.

Should a member request special pay, the disbursing officer will determine the amount he can pay from his file copy of the Leave and Earnings Statement, prepare a check or cash payment, and pay the member. The original money list on which the payment appears is forwarded by transmittal to the central site to be scanned and processed so as to update the Master Military Pay Account.

² Ibid.

EXHIBIT 6

PROPOSED FORMAT

-FOR-

LEAVE AND EARNINGS STATEMENT

From

Office of the Comptroller of the Navy

EXHIBIT 6

LEAVE AND EARNINGS STATEMENT

LEAVE AND EARNINGS STATEMENT															
NAME				SSAN		SERVICE NO.		SERV.		UNIT ID NO.					
D S V C E R V I C E	GRADE	YRS	FEES	CPES	YRS	DATE	SSAN	PRD	COVERED	DATE	PREP	RMS	CODE	AMOUNT	BF
	CP														TOTAL ENT.
															TOTAL ALCTS
D U T Y	CDL	INC.	TAX	PICA	ON										TOTAL DEDS
	TYPE	AMOUNT	DATE	SSAN	PR/VOUCHER	TYPE	AMOUNT	DATE	SSAN	PR/VOUCHER	TYPE	AMOUNT	DATE	SSAN	PR/VOUCHER
	TYPE	AMOUNT	DATE	SSAN	PR/VOUCHER	TYPE	AMOUNT	DATE	SSAN	PR/VOUCHER	TYPE	AMOUNT	DATE	SSAN	PR/VOUCHER
P H Y S	FORECASTS OF AMOUNTS DUE, AS INDICATED BELOW													AMT DUE/OF	
	PERIOD	INC	YTD	EXEM	TAX	YTD	DATE	MADE	F.	YTD	MADE	FICA	TAX	YTD	AMOUNT
	BF	EARN	USED	BAL	LEFT	EXD	BALANCE	OWED	AMOUNT	DATE	AMOUNT	DATE	AMOUNT	DATE	AMOUNT
REMARKS															
P E I O D U S E D F O R	ENTITLEMENTS				DATE	AMOUNT	DEDUCTIONS				DATE	AMOUNT			
									PAYMENTS						
									PR NO.	DD SYMBOL	DATE	AMOUNT			
NOTATION OF AMOUNT USED															

Since the payroll file is updated each time the disbursing officer receives a new Leave and Earnings Statement, some method must be devised to provide local service for extended periods when contact with the central computer cannot be maintained. The Personal Financial Record is the Navy's answer to this "local" Master Military Pay Account. A Personal Financial Record will be maintained locally for each member and will contain, in addition to all of the Leave and Earnings Statements from the preceding six months, any miscellaneous pay information that is not included in the computerized pay system, such as travel advances and payments of temporary lodging allowance.³ It will also indicate any payments or entitlements not yet included in the latest Leave and Earnings Statement, so when a member is transferred or departs on extended temporary-duty, he may take an up-to-date financial record with him.

The central system can be programmed for regular payment to individual members in one of two ways--either by local payment as discussed above, or by semi-monthly check payment directly to the member's bank. This latter method has been a long time coming in the Navy, but has been available, on a monthly basis, to Air Force personnel for several years.

Members desiring to have their net pay forwarded to a bank may do so by furnishing the local disbursing officer evidence that the bank will accept the check and by completion

³Ibid.

of an Allotment Authorization (NavCompt Form 545). This, by the way, is the same form used for all allotments of pay, and in time it will probably change. The big difference, however, is that the checks will be forwarded to the bank semi-monthly, where regular allotments are only sent monthly.

The disbursing officer removes the member's current Leave and Earnings Statement from the Payroll File and marks it to reflect that payment is being made directly to a bank. The Leave and Earnings Statement is then filed in a separate distinctive file to prevent duplicate payments.

The original Allotment Authorization will be submitted by transmittal to the central processing unit for inclusion in the Master Military Pay Account. Once acknowledgement is received from the central site, the copy of the Allotment Authorization will be filed in the member's Personal Financial Record.

Another feature of this new centralized program affecting enlisted personnel only, will be the provision for the individual, who is reenlisting with a break in service of less than 90 days, to be paid his reenlistment bonus prior to reporting to his new duty station. That is, provided there is sufficient time for the recruiting station reenlisting the member to obtain an initial Leave and Earning Statement from the Navy Finance Center in Cleveland. On the basis of data contained in this initial Leave and Earnings Statement, the disbursing officer may make payment.

Products For Management

Current requirements within the Department of Defense call for budgeting, accounting, and reporting for the cost of military personnel services as an element of operating costs.⁴ This has never before been fully accomplished. It has been attempted, but has usually ended up with inconsistent and thoroughly meaningless results. With the accurate cost data available, flowing from the centralized military pay system to almost all echelons of reporting within the budgetary structure, reports will not only become more accurate, but will have real meaning because they are based on facts.

To support the local activities with information which they, in turn, can use in the justification of their budget submission and other reports required under the Resources Management System, the central computer in Cleveland can provide periodic (probably monthly) reports of accrued entitlements of all active military personnel assigned to an activity. The report will contain a listing of all individuals by name, service number, and pay grade assigned to the ship or station at the end of the reporting period. It will include the accrued entitlements for each member in each of three entitlement categories--basic, incremental, and special non-routine.⁵

⁴U.S. Department of Defense, Budgeting and Accounting for the Cost of Military Personnel Services, Department of Defense Instruction 7220.15, 1 June, 1966.

⁵U.S. Department of the Navy, Office of the Comptroller of the Navy (NCFS-3), Criteria and Data Requirements for Reporting Pay and Allowances, 17 February 1967, Enclosure 6, p. 1.

The three catagories of accrued entitlements will consist of the following:

A. Basic entitlements

(1) Items recorded to the Master Military Pay

Accounts:

- (a) Basic Pay
- (b) Basic Allowance for Quarters
- (c) Subsistence (Basic Allowance for Subsistence)
- (d) Station Allowances Overseas
- (e) Uniform Allowances
- (f) Clothing Allowances (except Initial Clothing Allowance for enlisted personnel)
- (g) Family Separation Allowances
- (h) Separation from Service Payments
- (i) Social Security Tax - Employer's Contribution (FICA)
- (j) Personal Money Allowances (Officers Pay Grade O-9 and O-10)

(2) Items not recorded to the Master Military Pay

Accounts:

- (a) Subsistence (in kind)
- (b) Apprehension of Military Deserters, Absentees, and Escaped Military Prisoners.
- (c) Interest on Uniformed Services Savings Deposits

- (d) Death Gratuities
- (e) Servicemen's Group Life Insurance
- (f) Initial Clothing Allowance for Enlisted Personnel (clothing issued in kind to recruits)
- (g) Retirement Pay Liability⁶

B. Incremental Entitlements - The entitlements listed below are all recorded to the Master Military Pay Accounts:

- (1) Flying Duty - Crew
- (2) Submarine Duty
- (3) Flying Duty - Non Crew
- (4) Glider Duty
- (5) Parachute Jumping Duty
- (6) High or Low Pressure Chamber Duty
- (7) Demolition Duty
- (8) Flight Deck Duty
- (9) Physicians and Dentists
- (10) Sea and Foreign Duty
- (11) Proficiency Pay
- (12) Hostile Fire Pay
- (13) Diving Duty Pay⁷

C. Special Non-routine Entitlements - The entitlements listed below are all recorded to the Master Military

⁶ Ibid.

⁷ Ibid., p. 2.

Pay Accounts:

- (1) Reenlistment Entitlement
- (2) Claim Adjustment
- (3) Retroactive Promotion
- (4) Lump-sum Leave Payments
- (5) Others That May Occur⁸

The actual submission of the report to the activity concerned will be in the form of punched cards, magnetic tape, or printed forms, depending on the processing method employed by the recipient.

In addition to the activity reports, the Bureau of Naval Personnel will also receive certain information necessary for the proper management of the Military Personnel, Navy, Appropriation. As the manager of this appropriation, the bureau must not only be cognizant of the amounts obligated to it, but also the actual amounts disbursed from it. In the past the time lag between these two reports has been considerable, and when finally balanced out, the validity of the results has been doubtful. Now, however, a monthly report of obligations (accrued entitlements) can be submitted to the bureau for each year of the appropriation and will include not only the current month figures, but a cumulative figure for the year. Disbursements can also be reported monthly enabling a comparison of obligations with actual expenditures.

To assist in personnel strength, planning, and programming, the monthly obligations report will also indicate the

⁸Ibid., p. 2.

following: The unit identification code of the unit to which each member is assigned; a classification code; the current month man-days applicable to each classification code; the amount of obligation for the current month applicable to each classification code; the prior month's cumulative, to date total of man-days, plus the current month man-days; and the prior month's cumulative, to date dollar totals, plus current month obligations.⁹

The classification code mentioned in item two above, is a new innovation in budget programming in the Navy. Through the utilization of this code the Military Pay, Navy, Appropriations manager at the Bureau of Naval Personnel will be able to know what expenditures have been, Navy-wide, for a given month and cumulative for previous months, for any element of pay. The composition of the code is unique and provides the system with an almost unlimited number of possibilities for expansion, should the need arise.¹⁰

Each classification code will consist of eight alphanumeric characters in three major groupings. The first group consists of four numeric digits identifying the budget subactivity subdivisions. The first two digits of this group identify the subactivity and are always identical with the last two digits of the budget subactivity subhead. For example, the budget subactivity subhead for Basic Pay is .2210 and the first two digits of the classification code are 10. The third

⁹Ibid., Enclosure 11.

¹⁰Ibid., Enclosure 13.

digit of this first group will identify the first subdivision of the budget subactivity, e.g., incentive pay for hazardous duty. The fourth digit of this group will identify the second level of subdivisions of the budget subactivity, e.g., crew member or non-crew member involved in flying duty.¹¹

The second group of digits consists of two alpha-numeric characters identifying the pay grade of Officers (two categories), Warrant Officer, and Enlisted Men. The first digit identifies the rank structure and the second, the pay grade within that structure.¹²

The third group consisting of two alpha-numeric characters will identify various items, such as longevity, number of dependents, type or level of diving duty performed, the yearly installment of the variable reenlistment bonus, or supplementary clothing allowances.¹³

Typical classification codes for each of the four ranking groups are illustrated below:

1. Basic Pay for an officer in pay grade O-2
(Lieutenant Junior Grade) with over six years
longevity, four of which were as an enlisted
member:

1000 B2 06

2. Incentive Pay for an officer in pay grade O-4
(Lieutenant Commander) with fourteen years

¹¹Ibid.

¹²Ibid.

¹³Ibid.

longivity in a flying duty status as a crew member:

1111 A4 14

3. Basic Allowance for Quarters for a Warrant Officer, pay grade W-3, with dependents:

1310 W3 00

4. Station Cost of Living Allowance overseas for an enlisted member, pay grade E-5 (Second Class Petty Officer), with two dependents:

2611 E5 D2

There are currently 946 classification codes scheduled to be placed in use, from which management will be able to obtain any monetary information applicable to the military pay area.¹⁴

The products of a centralized military pay system in the Navy are many and varied. In fact, as the systems development advances, many new and useful innovations here to for unheard of or unthought of, will undoubtedly be realized from this undertaking.

¹⁴Ibid., Enclosure 12.

CHAPTER VI

BENEFITS AND LIMITATIONS OF A CENTRALIZED PAY SYSTEM

Any discussion of the benefits of a computerized system must also, in all fairness, include a discussion of the factors limiting that system. Many of the benefits were briefly touched upon in the output phases presented in Chapter V. The limiting factors will be discussed later in this chapter.

The Benefits

The benefits of a centralized military pay system include not only those accruing to the individual, but also those affecting the various command levels from the smallest activity up to and including the Department of Defense. Those activities, offices, or bureaus which "must" depend upon the products of this system will be vitally interested in the benefits available from it to them.

To the Individual - The average sailor really cares very little how, when, or where his pay is calculated, as long as it is reasonably correct and he receives it when due. Receiving it is by far the most important of these two considerations. As for correctness, in all probability 80 to 85 percent of the personnel on active duty in the Navy today cannot accurately relate what their pay entitlements are or how much money is due to them on any given pay day. This situation is created by the complexity of the system--one

which has so many different and varied entitlements and deductions that it actually takes a person knowledgeable in pay computation to be able to interpret it accurately. Hopefully, the provision of the monthly Leave and Earnings Statement will not only serve as a basis for liason between the member (through his disbursing officer) and the central computer site, it will also provide an educational medium for the individual member concerning his own pay and allowances. For the member to be able to have access to this information on a timely and accurate basis, seems to be far and above the most important benefit he can receive from this program.¹

Of course, there are other benefits accruing to the individual from the centralized pay system. Some of these benefits may be considered direct and tangible, while the others are of an intangible nature, but they are none-the-less benefits.

The tangible benefits affecting individual members are listed below:

1. Enlisted personnel, who have been released from active duty, but who have been out of the service for less than 90 days, may receive their reenlistment bonus upon reenlisting and prior to reporting to their new duty station.
2. The member finally has the choice of how he is to

¹Martin C. Crider, Office of the Comptroller of the Navy (Systems Planning and Analysis Branch), Personal Interview, 6 October 1968.

receive his semi-monthly pay check--personally, or by having it sent to a bank.

3. Members in certain catagories, such as reserves recalled to active duty, may receive advanced payments of base pay prior to reporting to their first duty station.
4. Cross-service disbursing, i.e., the payment of a member by a disbursing officer of another service, will become simplified and unified throughout all the branches of the military. This, in itself, could have been accomplished prior to the implementation of the JUMPS program simply by agreement among the services on a standard procedure and format. Centralization or computerization, as such, will have no affect on this phase of the system. It is presented here as a benefit only because it has been included as a major policy within the JUMPS program.²

The intangible benefits will have a very definite influence on the caliber of the pay service the individual receives. These benefits are:

1. There will never be a lost pay record in this system. No member will have to go weeks or sometimes months, receiving partial pay only, with a temporary pay record, created by the loss or

²Ibid., Various Dates.

destruction of his semi-annual hard-copy record.

2. With the increased interface between pay and personnel records, illegal and erroneous payments will be eliminated, or at least greatly reduced.
3. The audit function performed at the central site in Cleveland, rather than all over the world, can be a concentrated, comprehensive effort increasing the effectiveness and efficiency of the system and hence, the accuracy of the accounts and files.³

To Management - There is hardly a level of financial management in the Navy that will not be affected in some way by the centralization of military pay. This is true also at the Department of Defense level, where the budget and planning figures which are submitted for Bureau of the Budget and Presidential approval are first generated at the military department level.

To the Disbursing Officer in the field - This system will mean accuracy never before realized and the elimination of the semi-annual pay record transition period--a costly operation in both time and money.

Reports that are factual, timely, and comprehensive will now be available to various management levels. Some have been generated in the past from sources outside the pay system, but these have usually been difficult to obtain and not too dependable in content. A great deal of factual material will

³Ibid.

be available now that has been required, but not been available in the past--in or out of the pay system. The accrued accounting system particularly fits into this category.

The Commanding Officer of a Naval activity will now be apprized of what his military manpower strength is costing in dollars and cents. He will further be held responsible for the administration of the funds affecting this manpower, and by this knowledge will be able to submit more meaningful budget justifications for his command when required.

This accuracy of budget information goes all the way up the chain of command. The information furnished to the Bureau of Naval Personnel from the central computer in Cleveland will form the backbone of the bureau's request for manpower funding via the Military Pay, Navy, Appropriation. This request to the Department of Defense will provide an essential part of the Department of Defense's requests for funds from higher authority. Also foremost in this area, the accuracy of reporting and the establishment of effective controls over program executions will enable the Department of Defense, in the long run, to obtain more productive outputs from its dollar inputs.⁴

The Limitations

In light of the aforementioned benefits, it is difficult

⁴U.S. Department of the Navy, Office of the Comptroller of the Navy (NCFS-3), Criteria and Data Requirements For Reporting Pay and Allowances, loc. cit.

to envision that this system could have any limitations.

Rather than a discussion of the limitations of the system after implementation, I would like to explore some reservations which merit examination prior to implementation.

From a disbursing officer's point of view, I wonder what the impact on service and morale will be if this system does not, in some way, live up to its expectations? Once the shift is made to the central computer, there are bound to be difficulties not envisioned in the planning stages. The personnel being paid must be conditioned to accept these momentary delays until the system is perfected.

I have a definite reservation regarding the cost of the JUMPS implementation. It is not planned at this time to save any positions at the various disbursing offices around the world.⁵ The development of the central site, however, cannot be accomplished without substantial additional outlays for equipment and personnel. The exact figures are not available to me, but based on a lease method for the equipment and salaries for the personnel concerned, this additional outlay could quite possibly be in excess of \$3 million a year. This in turn raises the question of why the military services cannot have a "joint" uniform pay system without all this centralization and computerization. Neither of these programs are

⁵Frank L. Houtman, Office of the Comptroller of the Navy (Financial Services Budget Office), Personal Interview, 15 March 1968.

actually necessary to make the pay system uniform throughout all of the services. The answer, of course, is that they can develop a "joint" uniform pay system without centralization and computerization if military pay is the only consideration. When also considering the management information implications of this system, however, centralization and computerization are an absolute necessity.

Finally, I have some reservations as to whether the Resources Management System will ever become operational within the Department of Defense. If it does not materialize as planned, the mechanized pay system may not be worth the cost--for maintenance of pay records alone.

CHAPTER VII

SUMMARY AND CONCLUSIONS

Consolidation and centralization has been the order-of-the-day for at least the last seven years in the Department of Defense. There is little reason to doubt that this trend will not continue. The centralization of military pay functions is coming now because this is the way of life in our government, not just in the Department of Defense. With legislative requirements becoming increasingly more demanding each year and with the complexities inherent in this growing system, any form of simplification or mechanization of data collection and reporting that can be utilized to advantage must be pressed into use. Just to keep the system moving on an even keel is not enough. It must be capable of moving ahead in an atmosphere of dynamic growth.

The provision of factual and timely information for the Resources Management and budgeting systems is really what JUMPS is all about.¹ Without this information, these programs will never be accurate to the point of being useful on a day-to-day basis. The information to be furnished by JUMPS would have to be obtained from time consuming reports from far less accurate

¹U.S. Department of Defense Directive 7330.3 of 4 November 1966, loc.cit.

sources. The fact that the payment of military personnel is involved in this system is, in the long run, a secondary consideration.

The title Joint Uniform Military Pay System leads to the misconception that complete unification of military pay will be accomplished with the implementation of the system. This is in fact not so. There is unification at the Department of Defense level where reports submitted by the various services are received and consolidated; but there is no unification of the processes involved in paying personnel. Each service can choose its own hardware and can develop its own programs. The end product available in the form of management information will be the same, but all services will have arrived at this point via vastly divergent paths.

The costs involved in the implementation of the JUMPS program are substantial, but the savings to be realized in the management information areas, once operational, should more than compensate for this outlay. The savings would be even more significant, if the joint unification were a completely joint unification of pay of all the services, similar to the Defense Supply Agency or the Defense Intelligence Agency. This, however, may still be realized in the distant future.

The reasoning at the Department of Defense level for this "intermediate" program could very well be to let the military services proceed independently toward the development of their respective systems, and at some point in the future

pick the one that is most compatible with a completely joint uniform system. To me, this complete entity is the only answer for a joint unification as such, but achieving it will be something else entirely. Only time will tell.

BIBLIOGRAPHY

Public Documents

- Adelson, Norman P., "ADPE Selection Office to Apply New Approach to Navy Computer Procurement," Navy Management Review, NAVSO P910, Vol. XII, No. 9, September 1967.
- Gartley, Clyde E., and Jacobs, Frank S., "A Mechanized Military Pay System," Navy Supply Corps Newsletter, Vol. XXX, No. 5, May 1967.
- Sylvester, Gerald D., "Navy Activates New Automatic Data Processing Equipment Selection Office," Navy Management Review, NAVSO P910, Vol. XII, No. 9, September 1967.
- Yates, Hon. Frank L., Acting Comptroller General of the United States, Letter to The Secretary of the Navy, 18 September 1943.
- U.S. Congress, Public Law 216, 81st Congress, 1st Session, Title IV of the National Security Act.
- U.S. Congress, Public Law 784, 81st Congress, 2nd Session, The Budget and Accounting Procedures Act of 1950.
- U.S. Congress, Public Law 863, 84th Congress, 2nd Session, The Budget and Accounting Procedures Act of 1956.
- U.S. Government, Commission on Organization of the Executive Branch of the Government, Budgeting and Accounting, Washington, D.C., 1949.
- U.S. Government, Commission on Organization of the Executive Branch of the Government, Budgeting and Accounting, Washington, D.C., 1955.
- U.S. Department of Defense, Selection and Acquisition of Automatic Data Processing Equipment (ADPE), Department of Defense Directive 4105.55, 28 September 1963.
- U.S. Department of Defense, Data Elements and Data Codes Standardization Program, Department of Defense Directive 5000.11, 7 December 1964.

- U.S. Department of Defense, Responsibilities for the Administration of Automatic Data Processing Equipment Programs, Department of Defense Directive 5100.40, 28 September 1963.
- U.S. Department of Defense, Program for Improvement in the Management of Military Personnel Appropriations and Related Personnel Programs of the Active Forces, Department of Defense Directive 7040.3 of 2 October 1962.
- U.S. Department of Defense, Program for the Development, Test, Evaluation, and Installation of the Joint Uniform Military Pay System, Department of Defense Directive 7330.3 of 4 November 1966.
- U.S. Department of Defense, Budgeting and Accounting for the Cost of Military Personnel Services, Department of Defense Instruction 7220.15, 1 June 1966.
- U.S. Department of Defense, A Primer on Project PRIME, April 1967.
- U.S. Department of the Navy, Office of the Comptroller of the Navy, Department of the Navy Budget Digest, Fiscal Year 1967, 15 December 1966.
- U.S. Department of the Navy, Office of the Comptroller of the Navy (NCFS-3), Criteria and Data Requirements for Reporting Pay and Allowances, 17 February 1967.
- U.S. Department of the Navy, Financial Management of Resources (Departmental and Field Activities), NAVSO P-3006, December 1966.
- U.S. Department of the Navy, Financial Management of Resources (Operating Forces), NAVSO P-3013, March 1967.
- U.S. Department of the Navy, Joint BuPers/NavCompt Study of Source Data Automation Methods, 31 May 1967.
- U.S. Department of the Navy, Project 007-67, Optical Character Recognition Acquisition for United States Navy, Automatic Data Processing Selection Office, December 1967.

Books

- Enke, Stephen (Ed.), Defense Management, Englewood Cliffs, N.J., Prentice-Hall Inc., 1967

Gregory, Robert H. and Van Horn, Richard L., Automatic Data-Processing Systems Principles and Procedures, Belmont, California, Wadsworth Publishing Company, Inc., 1963.

Hitch, Charles J., Decision Making for Defense, Los Angeles, California, University of California Press, 1965.

Novik, David (Ed.), Program Budgeting, Program Analysis, and The Federal Budget, Cambridge, Massachusetts, Harvard University Press, 1960.

Weidenbaum, Murray L., Federal Budgeting, The Choice of Government Programs, Washington, D.C., American Enterprise Institute for Public Policy Research, 1964.

Professional Journals

Sparks, Clarence K., "Military Pay," The Armed Forces Comptroller, Vol. 12, No. 3, July 1967, 14-15

Other

Puzin, Vivienne M., U.S. Navy Finance Center, Washington (Military Pay Department), Personal Interview, 29 January.

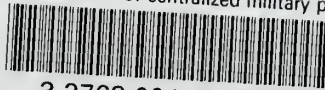
Tartasky, Meyer, Deputy Comptroller (RMS), Office of the Secretary of Defense, Guest Speaker, Navy Graduate Financial Management Program, The George Washington University, 4 October 1967.

U.S. Department of the Navy, Office of the Comptroller of the Navy, Personal Interviews with twelve selected officials. October 1967 - March 1968.

Weitzel, Frank H., Assistant Comptroller General of the United States, Guest Speaker, Navy Graduate Financial Management Program, The George Washington University, 13 November 1967.

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